

# Line connector type MSD and others

## Product documentation



for electromagnetically actuated hydraulic valves



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# Contents

|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>Overview of line connector type MSD and others.....</b>                           | <b>4</b>  |
| <b>2</b> | <b>Available versions, main data.....</b>  | <b>5</b>  |
| 2.1      | Line connector for single-action solenoid.....                                       | 5         |
| 2.1.1    | With pedestal per DIN 43650 Type A (ISO 4400).....                                   | 5         |
| 2.1.2    | With pedestal per industrial standard Type B (11 mm contact gap).....                | 10        |
| 2.1.3    | With central pedestal.....   | 11        |
| 2.1.4    | AMP mating connector, 2-pin.....   | 13        |
| 2.1.5    | Schlemmer plug.....  | 13        |
| 2.2      | Line connector for double and reverse solenoids and twin solenoids.....              | 14        |
| 2.2.1    | With connection base to DIN 43650 model A (ISO 4400).....                            | 14        |
| 2.2.2    | With pedestal per DIN 43650 Type C.....  | 17        |
| 2.2.3    | AMP mating connector set.....  | 17        |
| 2.2.4    | Schlemmer plug with bayonet.....   | 18        |
| 2.3      | Line connector for switch units.....   | 19        |
| 2.3.1    | With connection base to DIN 43650 model A (ISO 4400).....                            | 19        |
| 2.3.2    | With connection base to DIN 43650 model C.....                                       | 20        |
| 2.3.3    | Schlemmer plug with bayonet.....   | 20        |
| 2.3.4    | MSD-T7 M12 socket.....   | 21        |
| 2.4      | Adapter.....   | 22        |
| 2.4.1    | Adapter for pedestal per DIN 43650 Type A.....                                       | 22        |
| 2.4.2    | Adapter connection base to DIN 43650 model B.....                                    | 23        |
| 2.4.3    | Adapter for pedestal, central pedestal.....  | 23        |
| <b>3</b> | <b>Dimensions.....</b>   | <b>25</b> |
| 3.1      | Line connector per DIN 43650 TL.1, Type A.....                                       | 25        |
| 3.2      | Ready-for-connection line connector to DIN 43650 part 1, model A.....                | 27        |
| 3.3      | Line connectors slim design, per industrial standard Type B (11 mm contact gap)..... | 27        |
| 3.4      | Central socket.....  | 28        |
| 3.5      | Line connector per DIN 43650 TL.1, Type C.....                                       | 28        |
| 3.6      | AMP mating connector set.....  | 29        |
| 3.7      | Schlemmer plug with bayonet.....   | 30        |
| 3.8      | Plug MSD-T7 M12.....   | 30        |
| 3.9      | Adapter for pedestal DIN Form A to M12.....  | 31        |
| 3.10     | Adapter for pedestal DIN Form A - DIN Form B.....                                    | 32        |
| 3.11     | Adapter for central pedestal to DIN Form A.....                                      | 32        |

**1****Overview of line connector type MSD and others**

Line connectors are used to establish the electrical connection for solenoid valves and valves with integrated electronics as well as for directional and pressure sensors.

The line connectors type MSD and others are available in different designs and with various additional electrical functions.

HAWE valves with electric actuation have an abbreviation in the order coding that provides information about the type and level of supply voltage as well as the type of line connector. The abbreviation is valve-specific and is described in the relevant publication. Normally, line connectors are part of the scope of delivery of valves.

**Features and benefits:**

- Cost-effective interference suppression measure
- Switching position monitoring via LEDs
- Rectifier circuit
- Energy savings during continuous operation

**Intended applications:**

- Industrial hydraulics
- Mobile hydraulics



Line connector type MSD and others

## 2 Available versions, main data

### 2.1 Line connector for single-action solenoid

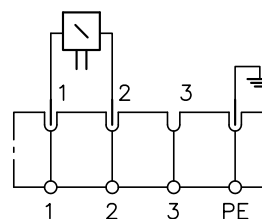
#### 2.1.1 With pedestal per DIN 43650 Type A (ISO 4400)

Protection class IP 65 per DIN EN 60529 and IEC 60529 when assembled and tightened

##### Line connector with no additional function

| Type                       | Part number                                     | Colour      | Number of contacts       | Operating voltage   | Current         |
|----------------------------|---|-------------|--------------------------|---------------------|-----------------|
|                            |   |             |                          | $U_{\max}$          | $I_{\max}$      |
| MSD 3-309 <sup>1) 3)</sup> | 6217 0002-00                                    | black       | 3+PE                     | 250 V DC/AC         | 5 A             |
|                            | max. conductor cross section (mm <sup>2</sup> ) | Cable gland | Cable $\varnothing$ (mm) | Ambient temperature | Notes, assembly |
| MSD 3-309 <sup>1) 3)</sup> | 1.5   | Pg 9        | 6 - 8                    | -40 ... +100°C      |                 |

Series: black housing (B socket), when used for single-action solenoid, contact 3 remains unused.



Contact 3 remains unused.

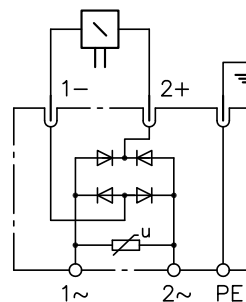
##### Line connector with rectifier (circuit)

| Type                           | Part number                                     | Colour      | Number of contacts       | Operating voltage   | Current               |
|--------------------------------|---|-------------|--------------------------|---------------------|-----------------------|
|                                |   |             |                          | $U_{\max}$          | $I_{\max}$            |
| MSD 4-209 P10                  | 6217 6002-00                                    | black       | 2+PE                     | 250 V AC            | 1 A                   |
|                                | max. conductor cross section (mm <sup>2</sup> ) | Cable gland | Cable $\varnothing$ (mm) | Ambient temperature | Notes, assembly       |
| MSD 4-209 P10 <sup>1) 2)</sup> | 1.5   | Pg 9        | 6 - 8                    | -40 ... +100°C      | Full bridge rectifier |

Rectifier sockets enable the use of DC solenoids on AC mains supply (50 Hz and 60 Hz).

MSD 4-209 P10 with full bridge rectifier insert for single-action solenoids with 98 V DC coils on 110 V AC mains or 205 V DC coils on 230 V AC mains.

$$U_{DC} = 0.9 U_{AC} - 2 V$$



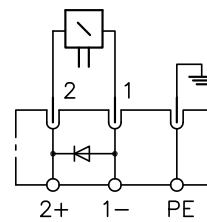
**Line connector with clamp diode**

| Type           | Part number  | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|----------------|--|-------------|--------------------|--------------------------------|----------------------|
| MSD 3-209 C1   | 6236 5002-00                                       | black       | 2+PE               | 250 V DC                       | 4 A                  |
| MSD 4-309 C1+R | 6217 0009-00                                       | black       | 2+PE               | 24 V DC                        | 4 A                  |
|                | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>∅ (mm)    | Ambient temperature            | Notes, assembly      |
| MSD 3-209 C1   | 1.5  | Pg 9        | 6 - 8              | -40 ... +100°C                 | D                    |
| MSD 4-309 C1+R | 1.5  | Pg 9        | 6 - 8              | -40 ... +100°C                 | D+R                  |

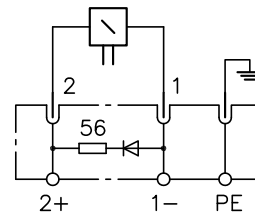
MSD 3-209 C1 with one clamp diode, for use with single-action solenoids.

Both overvoltages and electromagnetic interference occur when switching solenoid valves (inductances). Clamp diodes <sup>1)</sup> <sup>2)</sup> connected in parallel with the coil can suppress the cut-off voltage peaks and ensure the highest degree of EMC, however they extend the hydraulic valve's switch-off time.

**MSD 3-209 C1**



**MSD 4-309 C1+R**



**i NOTE**  
Make sure that the polarity is correct! No reverse polarity protection!

MSD 4-309 C1+R with an additional resistor, in series with the clamp diode. Due to the resistor the voltage on the diode is better distributed and protects the clamp diode against overcurrent.

MSD 4-309 C1+R for use with stroke-monitored 2/2-directional valves according to Sk 7380 b and e and Sk 7380 E and F.

<sup>1)</sup> **i NOTE**  
The diodes extend the valve's fall time by 2 ... 5 times or more, depending on the size of the solenoid and the valve mounting.

<sup>2)</sup> Diodes 1 N 4007, peak reverse voltage 1000 V, nominal current 1 A

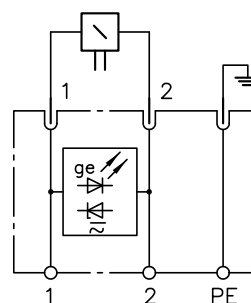
- <sup>3)</sup> D = Diode  
R = Resistor  
Z = two Z-diodes in series in opposite directions  
LED = Light emitting diode  
rd. = red  
grn. = green  
yell. = yellow

### Line connector with LED display and protective circuit

| Type        | Part number  | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|-------------|--|-------------|--------------------|--------------------------------|----------------------|
| SVS 3129020 | 6217 8024-00                                       | black       | 2+PE               | 24 V DC/AC                     | 4 A                  |
| SVS 296048  | 6217 8025-00                                       | grey        | 2+PE               | 24 V DC/AC                     | 4 A                  |
|             | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>Ø (mm)    | Ambient temperature            | Notes, assembly      |
| SVS 3129020 | 1.5  | Pg 9        | 5 - 10             | -30 ... +100°C                 | 2+LED yell.          |
| SVS 296048  | 1.5  | Pg 9        | 5 - 10             | -30 ... +100°C                 | D+R                  |

With two Z-diodes that are connected in series in opposite directions, a sufficient protective effect can be achieved with only a slight extension of the switch-off time.

SVS 3129020 and SVS 296048 each with protective circuit, yellow LED display, impervious to polarity for 24 V DC/AC. Transparent cover.

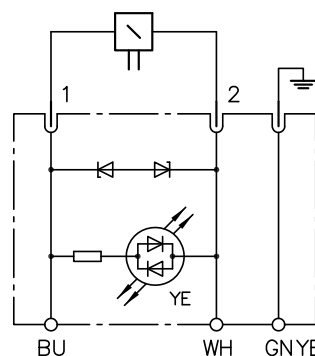


### Ready-for-connection line connector L5K with 5 m cable and L10K with 10 m cable

| Type | Part number  | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|------|--|-------------|--------------------|--------------------------------|----------------------|
| L5K  | 6217 8088-00                                       | black       | 2+PE               | 24 V DC/AC                     | 3 A                  |
| L10K | 6217 8090-00                                       | black       | 2+PE               | 24 V DC/AC                     | 3 A                  |
|      | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>Ø (mm)    | Ambient temperature            | Notes, assembly      |
| L5K  | 1.5  | --          | 5.2                | -40 ... +80°C                  | Z+LED yell.          |
| L10K | 1.5  | --          | 5.2                | -40 ... +80°C                  | Z+LED yell           |

L5K and L10K are ready-for-connection valve sockets with LED display for single-action solenoids. At the valve end the connection cable is securely moulded to the line connector. The ready-for-connection single wires at the free end of the cable are provided with wire end sleeves. The line connectors are equipped with an integrated seal to the base plate.

- Overvoltage protection against inductive cut-off voltage peaks up to 47 V

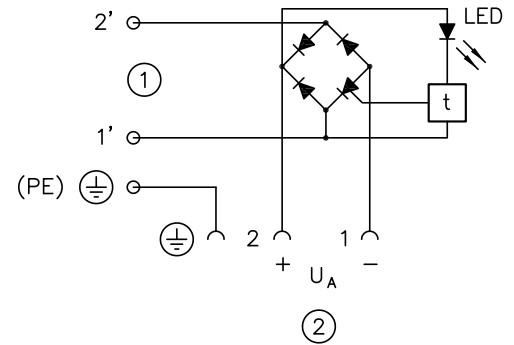


### Line connector with economy circuit

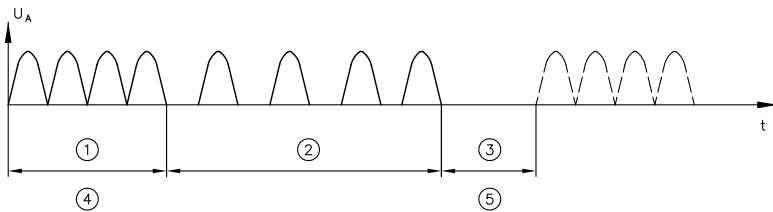
| Type      | Part number  | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$            |
|-----------|--|-------------|--------------------|--------------------------------|---------------------------------|
| MSD 4 P53 | 6217 8006-00                                       | white       | 2+PE               | 230 V AC                       | 1 A                             |
| MSD 4 P63 | 6217 8007-00                                       | white       | 2+PE               | 115 V AC                       | 1 A                             |
|           | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>∅ (mm)    | Ambient temperature            | Notes, assembly                 |
| MSD 4 P53 | 1  | Pg 9        | 4-8                | 0 ... +40°C                    | Full bridge rectifier + LED rd. |
| MSD 4 P63 | 1  | Pg 9        | 4-8                | 0 ... +40°C                    | Full bridge rectifier + LED rd. |

For directional valves with single-action solenoid. When existing full bridge rectifier circuitry is switched on, it is switched to half-bridge after a certain delay. The initial voltage is reduced from  $0.89 \times U_{mains}$  to the folding voltage of  $0.45 \times U_{mains}$ .

For use during long switch-on times with only short pauses, during continuous operation or under increased ambient temperature. By reducing the applied voltage, the coil temperature is considerably lowered and this can result in a significant extension of solenoid lifetimes.



- 1 Supply voltage
- 2 Solenoid



- 1 Achieve work position
- 2 Maintain work position
- 3 Off
- 4 (Switchover time)
- 5 Restoration time

Switch-over time is the time from switching on until switching over to the economy voltage. 0.5...7 s (upper value when cold, lower value when warm).

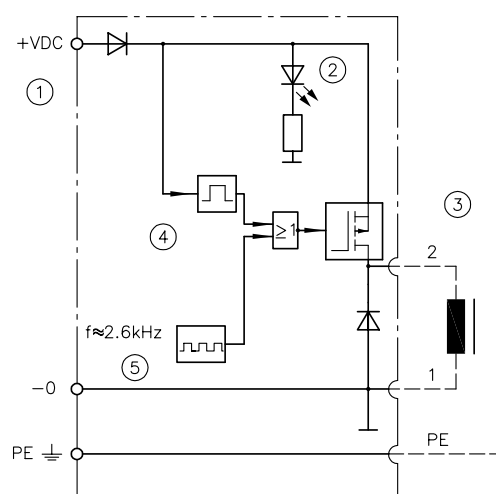
Restoration time is the time required to reset the unpowered electronics from the economy setting to their initial condition. approx. 0.4 ... 0.8 s

| Type      | Part number  | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|-----------|--|-------------|--------------------|--------------------------------|----------------------|
| MSD 4 ECO | 6217 8203-00                                       | transparent | 2+PE               | 30 V AC                        | 1.5 A                |
|           | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>∅ (mm)    | Ambient temperature            | Notes, assembly      |
| MSD 4 ECO | 1.5  | Pg 9        | 4-8                | -20 ... +50°C                  | LED yell.            |



|  |             |   |
|--|-------------|---|
| <b>Ripple factor</b>                           | w           | max. 10% (smooth supply voltage sufficiently)   |
| <b>Initial voltage</b>                         | $U_A$       | $U_B - 0.8 \text{ V DC}$  |
| <b>Start current</b>                           | $I_A$       | max. 1.5 A  |
| <b>Holding voltage</b>                         | $U_H$       | 0.75 ... 0.79% $U_B$ fixed  |
| <b>Holding current</b>                         | $I_H$       | max. 1.2 A<br>Holding voltage is the voltage at the solenoid valve in a steady state.   |
| <b>Response time (On)</b>                      | $t_{on}$    | Refer to the relevant information in the publication for G 24 versions accompanying the valve.  |
| <b>Drop-off time</b>                           | $t_{off}$   | Depending on the valve type, the switch-off delay and fall time may be considerably longer than specified in the relevant publications. |
| <b>Switchover time</b>                         | $t_u$       | Approx. 600 ... 750 ms fixed.<br>Switch-over time is the time from switching on until switching over to the holding voltage.            |
| <b>Clock frequency of the PWM output stage</b> | $f_{clock}$ | $\approx 2.6 \text{ kHz}$   |
| <b>Max. permissible switching frequency</b>    |             | 0.1 Hz  |

MSD 4 ECO for 24 V DC for controlling black/white solenoids. The excitation voltage, which is fully connected when switched on, is reduced after a certain delay and the valve is then supplied with only approx. 75% of the voltage. When the solenoid is energized, this is indicated by a yellow LED.



- 1 Supply voltage
- 2 LED yellow
- 3 Solenoid valve
- 4  $t_{start-up} \approx 650 \text{ ms}$
- 5 duty cycle = 0,75...0,79

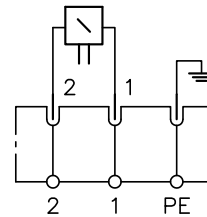
## 2.1.2 With pedestrian per industrial standard Type B (11 mm contact gap)

Protection class IP 54 per DIN EN 60529 and IEC 60529 when assembled and tightened

### Line connector with no additional function

| Type      | Part number                                     | Colour      | Number of contacts       | Operating voltage   | Current         |
|-----------|---|-------------|--------------------------|---------------------|-----------------|
|           |   |             |                          | $U_{\max}$          | $I_{\max}$      |
| MSD 6-209 | 6236 5004-00                                    | black       | 2+PE                     | 250 V DC/AC         | 5 A             |
|           | max. conductor cross section (mm <sup>2</sup> ) | Cable gland | Cable $\varnothing$ (mm) | Ambient temperature | Notes, assembly |
| MSD 6-209 | 1.5   | Pg 9        | 6 - 8                    | -40 ... +100°C      |                 |

Line connector MSD 6-209 in standard version (without LED or protective circuit).  
For all single-action solenoids with narrow type of plug and flat plug tabs. E.g. size 0 of the valve in the arrangement [D 7300](#), but also for proportional valves with proportional solenoids  $\Phi 25$ .



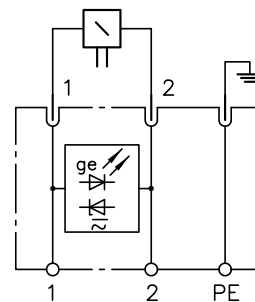
### Line connector with LED display and protective circuit

| Type        | Part number                                     | Colour      | Number of contacts       | Operating voltage   | Current         |
|-------------|---|-------------|--------------------------|---------------------|-----------------|
|             |   |             |                          | $U_{\max}$          | $I_{\max}$      |
| SVS 3129720 | 6217 8027-00                                    | black       | 2+PE                     | 24 V DC/AC          | 4 A             |
|             | max. conductor cross section (mm <sup>2</sup> ) | Cable gland | Cable $\varnothing$ (mm) | Ambient temperature | Notes, assembly |
| SVS 3129720 | 1.5   | Pg 9        | 5 - 10                   | -30 ... +100°C      | Z+LED yell.     |

Line connector SVS 3129720 with yellow LED display and protective circuit formed by two Z-diodes.

With two Z-diodes that are connected in series in opposite directions, a sufficient protective effect can be achieved with only a slight extension of the switch-off time.

Impervious to polarity for 24 V DC/AC. Transparent cover.



### 2.1.3 With central pedestal

Protection class IP 54 per DIN EN 60529 and IEC 60529 when assembled and tightened

#### Line connector with no additional function

| Type          | Part number  | Colour | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|---------------|--------------|--------|--------------------|--------------------------------|----------------------|
| <b>MSD 1</b>  | 6236 5001-00 | black  | 2+PE               | 250 V DC/AC                    | 6 A                  |
| <b>MSD 1D</b> | 6236 5006-00 | black  | 2+PE               | 250 V DC/AC                    | 6 A                  |
| <b>MSD 2</b>  | 6217 6003-00 | black  | 2+PE               | 250 V DC/AC                    | 4 A                  |

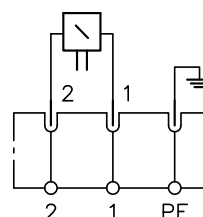
  

|               | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>$\varnothing$ (mm) | Ambient temperature | Notes, assembly         |
|---------------|--|-------------|-----------------------------|---------------------|-------------------------|
| <b>MSD 1</b>  | 1.5  | Pg 9        | up to 6                     | -40 ... +100°C      |                         |
| <b>MSD 1D</b> | 1.5  | Pg 9        | up to 6                     | -40 ... +100°C      | without manual override |
| <b>MSD 2</b>  | 1.5  | M12         | up to 6                     | -40 ... +100°C      |                         |

MSD 1 for size 1 of the G valve in the arrangement [D 7300](#). Manual override by pressing the cap (rubber cover cap within the scope of delivery).

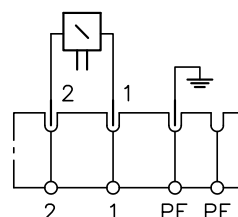
MSD 1D without rubber cap or manual override

**MSD 1  
MSD 1D**



MSD 2 for size 0 of the G valve in the arrangement [D 7300](#). Manual override by pressing the cap (rubber cover cap within the scope of delivery).

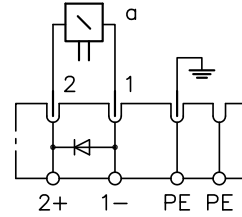
**MSD 2**  
Optional PE wire connection depending on the mounting direction of the plug



**Line connector with clamp diode**

| Type     | Part number  | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|----------|--|-------------|--------------------|--------------------------------|----------------------|
| MSD 2 C1 | 6217 6006-00                                       | black       | 2+PE               | 250 V DC/AC                    | 4 A                  |
|          | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>∅ (mm)    | Ambient temperature            | Notes, assembly      |
| MSD 2 C1 | 1.5  | M12         | up to 6            | -40 ... +100°C                 | D                    |

MSD 2 C1 version with clamp diode <sup>1)</sup> <sup>2)</sup> to suppress cut-off voltage peaks, e.g. in connection with electronic circuits and/or to achieve a longer fall time.



**i NOTE**

For MSD 2 C1, make sure that the polarity is correct! No reverse polarity protection.

- <sup>1)</sup> D = Diode  
R = Resistor  
Z = two Z-diodes in series in opposite directions  
LED = Light emitting diode  
rd. = red  
grn. = green  
yell. = yellow

<sup>2)</sup> **i NOTE**

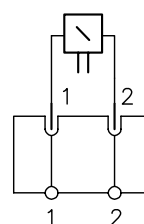
The diodes extend the valve's fall time by 2 ... 5 times or more, depending on the size of the solenoid and the valve mounting.

## 2.1.4 AMP mating connector, 2-pin

Protection class IP 67 per DIN EN 60529 and IEC 60529 when assembled

| Type                           | Part number                                     | Colour      | Number of contacts       | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|--------------------------------|---|-------------|--------------------------|--------------------------------|----------------------|
| AMP mating connector set 2-pin | 6217 0185-00                                    | black       | 2                        | 12/24 V DC                     | 1.26 A               |
|                                | max. conductor cross section (mm <sup>2</sup> ) | Cable gland | Cable $\varnothing$ (mm) | Ambient temperature            | Notes, assembly      |
| AMP mating connector set 2-pin | 1   | --          | up to 7                  | -30 ... +125°C                 |                      |

AMP Junior Timer mating connector set 2-pin for use with single-action solenoid. Suitable for applications requiring a higher degree of waterproofness.

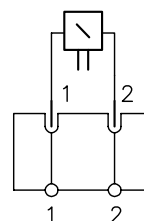


## 2.1.5 Schlemmer plug

Protection class IP 67 per DIN EN 60529 and IEC 60529 when assembled and tightened

| Type                     | Part number                                     | Colour      | Number of contacts       | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|--------------------------|---|-------------|--------------------------|--------------------------------|----------------------|
| Schlemmer 10 SL straight | 6217 8070-00                                    | black       | 3                        | 48 V DC                        | 13 A                 |
| Schlemmer 10 SL angle    | 6217 8071-00                                    | black       | 3                        | 48 V DC                        | 13 A                 |
|                          | max. conductor cross section (mm <sup>2</sup> ) | Cable gland | Cable $\varnothing$ (mm) | Ambient temperature            | Notes, assembly      |
| Schlemmer 10 SL straight | 1.0 - 1.5                                       | Pg 11       | up to 10                 | -25 ... 80°C                   |                      |
| Schlemmer 10 SL angle    | 1.0 - 1.5                                       | Pg 11       | up to 10                 | -25 ... 80°C                   |                      |

Schlemmer plug with bayonet type 10 SL is available in 2 versions, straight or angled at 90°.



## 2.2 Line connector for double and reverse solenoids and twin solenoids

### 2.2.1 With connection base to DIN 43650 model A (ISO 4400)

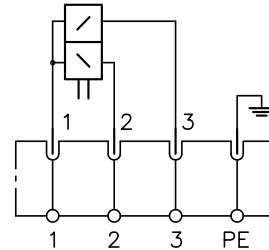
Protection class IP 65 per DIN EN 60529 and IEC 60529 when assembled and tightened

#### Line connector with no additional function

| Type      | Part number  | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|-----------|--|-------------|--------------------|--------------------------------|----------------------|
| MSD 3-309 | 6217 0002-00                                       | black       | 3+PE               | 250 V DC/AC                    | 5 A                  |
| MSD 3-309 | 6217 0003-00                                       | grey        | 3+PE               | 250 V DC/AC                    | 5 A                  |
|           | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>Ø (mm)    | Ambient temperature            | Notes, assembly      |
| MSD 3-309 | 1.5  | Pg 9        | 6 - 8              | -40 ... +100°C                 |                      |
| MSD 3-309 | 1.5  | Pg 9        | 6 - 8              | -40 ... +100°C                 |                      |

Series (black) for proportional solenoids  $\Phi 35$  and  $\Phi 45$  with standard plug type A.

Grey housing (A-socket) only for 4/3-directional spool valve type SW...



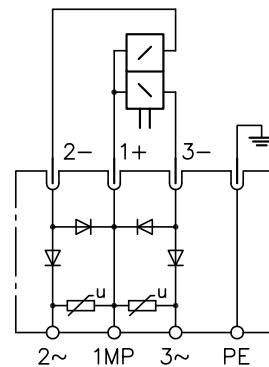
#### Line connector with rectifier (circuit)

| Type          | Part number  | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$   |
|---------------|--|-------------|--------------------|--------------------------------|------------------------|
| MSD 4-309 P22 | 6217 6001-00                                       | black       | 2+PE               | 250 V AC                       | 1 A                    |
|               | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>Ø (mm)    | Ambient temperature            | Notes, assembly        |
| MSD 4-309 P22 | 1.5  | Pg 9        | 6 - 8              | -40 ... +100°C                 | 2x half-wave rectifier |

Rectifier sockets for the use of DC solenoids on AC mains supply 50 Hz and 60 Hz.

MSD 4-309 P22 with double half-wave rectifier set with clamp diode <sup>1)</sup> <sup>2)</sup>, for double and reverse solenoids and twin solenoids with 102 V DC coils on 230 V AC mains or 48 V DC coils on 110 V AC mains.

$$U_{DC} = 0.45 U_{AC} - 1 V$$

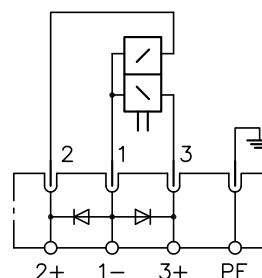


### Line connector with clamp diode

| Type                | Part number  | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|---------------------|--|-------------|--------------------|--------------------------------|----------------------|
| <b>MSD 4-309 C2</b> | 6236 6005-00                                       | black       | 3+PE               | 250 V DC                       | 4 A                  |
|                     | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>Ø (mm)    | Ambient temperature            | Notes, assembly      |
| <b>MSD 3-309 C2</b> | 1.5  | Pg 9        | 6 - 8              | -40 ... +100°C                 | 2xD                  |

MSD 4-309 C2 with two clamp diodes, for DC double and reverse solenoids and twin solenoids.

Both overvoltages and electromagnetic interference occur when switching solenoid valves (inductances). Clamp diodes <sup>1) 3)</sup> connected in parallel with the coil can suppress the cut-off voltage peaks and ensure the highest degree of EMC. However, they extend the hydraulic valve's switch-off time.

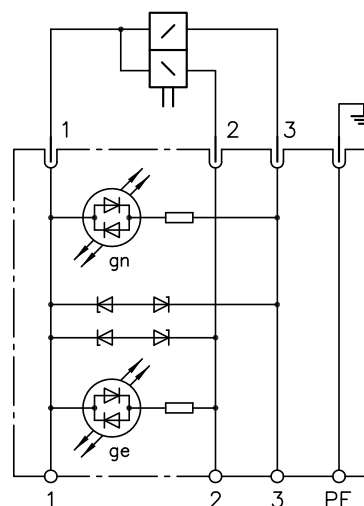


### Line connector with LED display and protective circuit

| Type              | Part number  | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|-------------------|--|-------------|--------------------|--------------------------------|----------------------|
| <b>SVS 296365</b> | 6217 8134-00                                       | black       | 3+PE               | 24 V DC                        | 4 A                  |
|                   | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>Ø (mm)    | Ambient temperature            | Notes, assembly      |
| <b>SVS 296365</b> | 1.5  | --          | 5 - 10             | -30 ... +100°C                 | 2x LED yell./grn     |

Line connector SVS 296365 with two LEDs (green and yellow) and protective circuit formed by two Z-diodes. For use with twin solenoids and double and reverse solenoids.

24 V DC/AC, impervious to polarity, cover transparent.

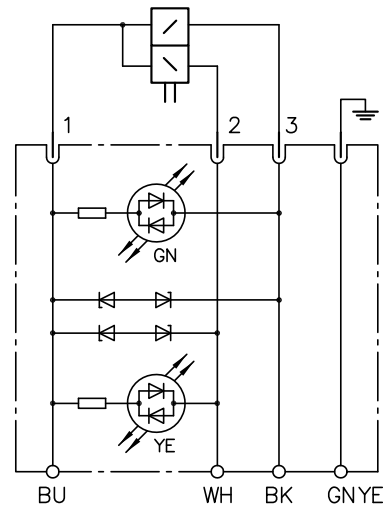


Ready-for-connection line connector L5K-VZP with 5 m cable and L10K-VZP with 10 m cable

| Type     | Part number  | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|----------|--|-------------|--------------------|--------------------------------|----------------------|
| L5K-VZP  | 6217 8086-00                                       | black       | 3+PE               | 10 ... 32 V DC/AC              | 3 A                  |
| L10K-VZP | 6217 8067-00                                       | black       | 3+PE               | 10 ... 32 V DC/AC              | 3 A                  |
|          | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>Ø (mm)    | Ambient temperature            | Notes, assembly      |
| L5K-VZP  | 0.5  | --          | 5.2                | -40 ... +80°C                  | Z+LED yell./ grn     |
| L10K-VZP | 0.5  | --          | 5.2                | -40 ... +80°C                  | Z+LED yell/ grn      |

L5K-VZP and L10K-VZP are ready-for-connection valve sockets with LED display for twin solenoids. At the valve end, the connection cable is securely moulded to the line connector; the ready-for-connection single wires at the other end are provided with wire end sleeves. The line connectors are provided with an integrated seal to the base plate.

- Overvoltage protection against inductive cut-off voltage peaks up to 47 V
- Ready-for-connection line connector with 5 m cable



<sup>1)</sup> **NOTE**  
The diodes extend the valve's fall time by 2 ... 5 times or more, depending on the size of the solenoid and the valve mounting.

<sup>2)</sup> Diodes 1 N 4007, peak reverse voltage 1000 V, nominal current 1 A

<sup>3)</sup> D = Diode  
R = Resistor  
Z = two Z-diodes in series in opposite directions  
LED = Light emitting diode  
rd. = red  
grn. = green  
yell. = yellow

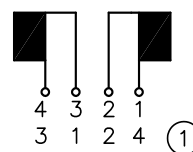


## 2.2.2 With pedestal per DIN 43650 Type C

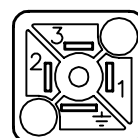
Protection class IP 65 per DIN EN 60529 and IEC 60529 when assembled and tightened

| Type          | Part number  | Colour             | Number of contacts      | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$   |
|---------------|--|--------------------|-------------------------|--------------------------------|------------------------|
| <b>MSD 10</b> | 6217 0036-00   | black              | 3+PE                    | 250 V DC/AC                    | 16 A                   |
|               | <b>max. conductor cross section<br/>(mm<sup>2</sup>)</b> | <b>Cable gland</b> | <b>Cable<br/>∅ (mm)</b> | <b>Ambient temperature</b>     | <b>Notes, assembly</b> |
| <b>MSD 10</b> | xx   | H6                 | xx                      | -40 ... +90°C                  |                        |

MSD 10 with pedestal per DIN 43650 Type C.



1 (for coding ...H 4 and ...C 4)



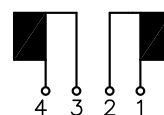
## 2.2.3 AMP mating connector set

Protection class IP 67 per DIN EN 60529 and IEC 60529 when assembled and tightened

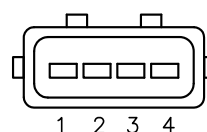
| Type                                  | Part number  | Colour             | Number of contacts      | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$   |
|---------------------------------------|--|--------------------|-------------------------|--------------------------------|------------------------|
| <b>AMP mating connector set 4-pin</b> | 6217 0180-00   | black              | 4                       | 24 V DC                        | 1.26 A                 |
|                                       | <b>max. conductor cross section<br/>(mm<sup>2</sup>)</b> | <b>Cable gland</b> | <b>Cable<br/>∅ (mm)</b> | <b>Ambient temperature</b>     | <b>Notes, assembly</b> |
| <b>AMP mating connector set 4-pin</b> | 1  | --                 | up to 7                 | -30 ... +125°C                 |                        |

AMP mating connector set 4-pin for twin solenoids and double and reverse solenoids.

Suitable for applications requiring a higher degree of waterproofness and reliability.



AMP Junior Timer,  
4-pin  
IP 67 (IEC 60529)

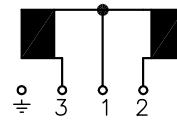


## 2.2.4 Schlemmer plug with bayonet

Protection class IP 67 per DIN EN 60529 and IEC 60529 when assembled and tightened

| Type                     | Part number                                     | Colour      | Number of contacts       | Operating voltage   | Current         |
|--------------------------|---|-------------|--------------------------|---------------------|-----------------|
|                          |   |             |                          | $U_{\max}$          | $I_{\max}$      |
| Schlemmer 10 SL straight | 6217 8070-00                                    | black       | 3                        | 48 V DC             | 13 A            |
| Schlemmer 10 SL angle    | 6217 8071-00                                    | black       | 3                        | 48 V DC             | 13 A            |
|                          | max. conductor cross section (mm <sup>2</sup> ) | Cable gland | Cable $\varnothing$ (mm) | Ambient temperature | Notes, assembly |
| Schlemmer 10 SL straight | 1.0 - 1.5                                       | Pg 11       | up to 10                 | -25 ... 80°C        |                 |
| Schlemmer 10 SL angle    | 1.0 - 1.5                                       | Pg 11       | up to 10                 | -25 ... 80°C        |                 |

Schlemmer 10 SL with bayonet is available in two versions, straight or angled at 90°.



## 2.3 Line connector for switch units

### 2.3.1 With connection base to DIN 43650 model A (ISO 4400)

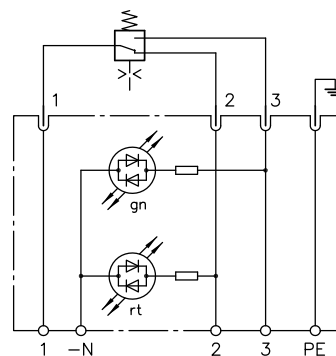
Protection class IP 65 per DIN EN 60529 and IEC 60529 when assembled and tightened

#### Line connector with LED display

| Type       | Part number  | Colour             | Number of contacts                         | Operating voltage          | Current                |
|------------|--|--------------------|--|----------------------------|------------------------|
|            |  |                    |  | $U_{\max}$                 | $I_{\max}$             |
| SVS 296100 | 6217 8026-00   | black              | 3+PE                                       | 24 V DC/AC                 | 5 A                    |
|            | <b>max. conductor cross section (mm<sup>2</sup>)</b> | <b>Cable gland</b> | <b>Cable <math>\varnothing</math> (mm)</b> | <b>Ambient temperature</b> | <b>Notes, assembly</b> |
| SVS 296100 | 1.5  | Pg 9               | 5 - 10                                     | -30 ... +100°C             | LED rd./grn            |

SVS 296100 has two independent LED displays, red and green, for pressure switches. For signalling the switching status on pressure switches in the arrangement [D 5440](#).

Transparent cover.

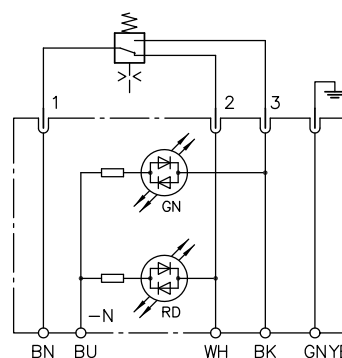


#### Ready-for-connection line connector L5K-DG with 5 m cable and L10K-DG with 10 m cable

| Type    | Part number  | Colour             | Number of contacts                         | Operating voltage          | Current                |
|---------|--|--------------------|--|----------------------------|------------------------|
|         |  |                    |  | $U_{\max}$                 | $I_{\max}$             |
| L5K-DG  | 6217 8087-00   | black              | 3+PE                                       | 24 V DC/AC                 | 3 A                    |
| L10K-DG | 6217 8091-00   | black              | 3+PE                                       | 24 V DC/AC                 | 3 A                    |
|         | <b>max. conductor cross section (mm<sup>2</sup>)</b> | <b>Cable gland</b> | <b>Cable <math>\varnothing</math> (mm)</b> | <b>Ambient temperature</b> | <b>Notes, assembly</b> |
| L5K-DG  | 0.5  | --                 | 5.2  | -40 ... +80°C              | Z+LED grn./rd.         |
| L10K-DG | 0.5  | --                 | 5.2  | -40 ... +80°C              | Z+LED grn/rd           |

L5K-DG and L10K-DG are ready-for-connection line connectors with LED display for pressure switches. The connection cable is securely moulded to the line connector. The ready-for-connection single wires at the free end of the cable are provided with wire end sleeves. The line connectors are provided with an integrated seal to the base plate.

- Overvoltage protection against inductive cut-off voltage peaks up to 47 V
- The ready-for-connection line connector has a cable length of 5 m.



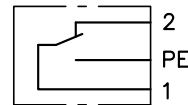
### 2.3.2 With connection base to DIN 43650 model C

Protection class IP 65 per DIN EN 60529 and IEC 60529 when assembled and tightened

| Type            | Part number  | Colour             | Number of contacts                         | Operating voltage          | Current                |
|-----------------|--|--------------------|--|----------------------------|------------------------|
|                 |  |                    |  | $U_{max}$                  | $I_{max}$              |
| <b>GDSN 207</b> | 6217 0037-00   | black              | 3  | 250 V DC/AC                | 6 A                    |
|                 | <b>max. conductor cross section (mm<sup>2</sup>)</b> | <b>Cable gland</b> | <b>Cable <math>\varnothing</math> (mm)</b> | <b>Ambient temperature</b> | <b>Notes, assembly</b> |
| <b>GDSN 207</b> | 0.75   | Pg 7               | 4.5 - 6                                    | -40 ... +125°C             |                        |

GDSN 207 is a line connector with pedestal per DIN 43650 Type C, for up to 250 V AC/DC.

GDSN 207 is equipped with 3 pins to supply the level switch and temperature switch on compact hydraulic power packs. See [D 7900](#) Item 4.2.



### 2.3.3 Schlemmer plug with bayonet

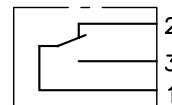
Protection class IP 67 per DIN EN 60529 and IEC 60529 when assembled and tightened

| Type                                 | Part number  | Colour             | Number of contacts                         | Operating voltage          | Current                |
|--------------------------------------|--|--------------------|--|----------------------------|------------------------|
|                                      |  |                    |  | $U_{max}$                  | $I_{max}$              |
| <b>Schlemmer plug 10 SL straight</b> | 6217 8070-00   | black              | 3  | 12/24 V DC                 | 13 A                   |
| <b>Schlemmer plug 10 SL angle</b>    | 6217 8071-00   | black              | 3  | 12/24 V DC                 | 13 A                   |
|                                      | <b>max. conductor cross section (mm<sup>2</sup>)</b> | <b>Cable gland</b> | <b>Cable <math>\varnothing</math> (mm)</b> | <b>Ambient temperature</b> | <b>Notes, assembly</b> |
| <b>Schlemmer plug straight 10 SL</b> | 1.0 - 1.5  | Pg 11              | up to 10                                   | -25 ... +80°C              |                        |
| <b>Schlemmer plug angle 10 SL</b>    | 1.0 - 1.5  | Pg 11              | up to 10                                   | -25 ... +80°C              |                        |

Schlemmer plug 10 SL with bayonet is available in two versions, straight or angled at 90°.

For use with DG 3 of the pressure switch as shown in the printed diagram [D 5440](#).

Contact 1-2 remains closed as long as the pressure is below the switching point.



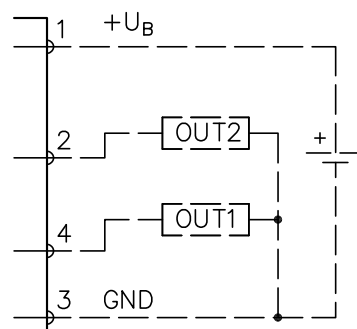
### 2.3.4 MSD-T7 M12 socket

Protection class IP 67 per DIN EN 60529 and IEC 60529 when assembled and tightened

| Type                 | Part number  | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|----------------------|--|-------------|--------------------|--------------------------------|----------------------|
| MSD-T7<br>M12x1, 90° | 6217 8048-00                                       | black       | 4                  | 250 V                          | 4 A                  |
|                      | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>Ø (mm)    | Ambient temperature            | Notes, assembly      |
| MSD-T7<br>M12x1, 90° | 0.75   | --          | 4 - 6              | -40 ... +85°C                  |                      |

MSD-T7 is a 90° angled line connector for pressure switches. Connection is M12x1.

To lock the cable connector with the device connector, the threaded ring is tightened "hand-tight".



## 2.4 Adapter

### 2.4.1 Adapter for pedestrial per DIN 43650 Type A

Protection class IP 65 per DIN EN 60529 and IEC 60529 when assembled and tightened

#### Adapter for pedestrial per DESINA DIN 43650 Type A / plug M12x1

| Type       | Part number  | Colour | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|------------|--------------|--------|--------------------|--------------------------------|----------------------|
| MSUD 41321 | 8225 0072-00 | black  | 3+PE               | 24 V DC/AC                     | 4 A                  |
| MSUD 41341 | 6217 8064-00 | black  | 4                  | 24 V DC/AC                     | 4 A                  |
| MSUD 41441 | 8225 0092-00 | black  | 3+PE               | 24 V DC/AC                     | 4 A                  |
| MSUD 41461 | 6217 8065-00 | black  | 4                  | 24 V DC/AC                     | 4 A                  |

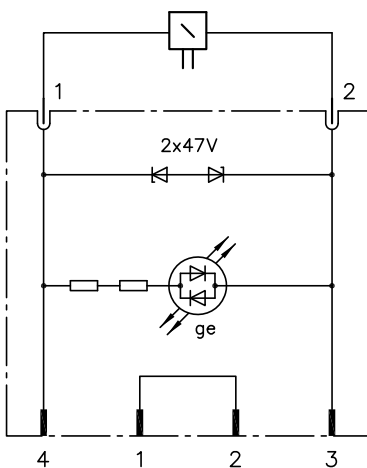
  

|            | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>$\varnothing$ (mm) | Ambient temperature | Notes, assembly                               |
|------------|--|-------------|-----------------------------|---------------------|---|
| MSUD 41321 | --   | --          | --                          | -25 ... +90°C       | Outlet to the top for pressure switch         |
| MSUD 41341 | --   | --          | --                          | -40 ... +90°C       | Outlet to the top for single-action solenoid  |
| MSUD 41441 | --   | --          | --                          | -25 ... +90°C       | Outlet to the rear for pressure switch        |
| MSUD 41461 | --   | --          | --                          | -25 ... +90°C       | Outlet to the rear for single-action solenoid |

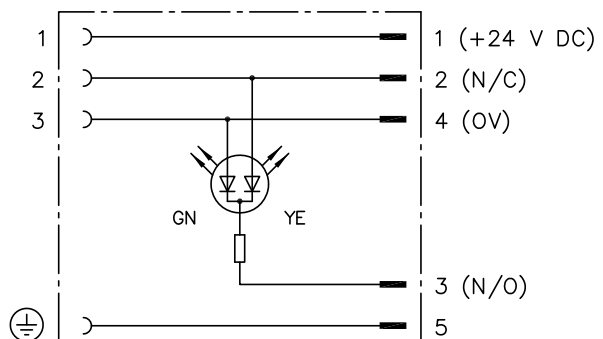
Inexpensive adapter for retrofitting single-action solenoid valves and pressure switches in compliance with DESINA with LED display and integrated protective circuit against inductive cut-off voltage peaks. The adapter is equipped with a simple cable break plausibility check in the form of bridged contacts 1 and 2.

The adapter contains a captive flat seal and an M3 central screw.

Single-action solenoid



Pressure switch



## 2.4.2 Adapter connection base to DIN 43650 model B

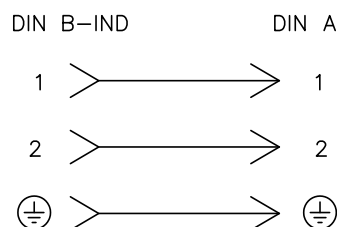
Protection class IP 65 per DIN EN 60529 and IEC 60529 when assembled and tightened

### Adapter for pedestrial DIN Form A - DIN B

| Type                       | Part number   | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|----------------------------|---|-------------|--------------------|--------------------------------|----------------------|
| Adapter<br>Form A - Form B | 6217 0238-00  | black       | 2+PE               | --                             | --                   |
|                            | max. conductor cross<br>section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>Ø (mm)    | Ambient temperature            | Notes, assembly      |
| Adapter<br>Form A - Form B | --  | --          | --                 | --                             | --                   |

Adapter model A - model B for the transition from the industry standard model B to DIN 43650 model A. This allows the proportional amplifier EV2S in the arrangement [D 7818/1](#) to be used to activate a solenoid valve with an industry standard connector.

Electrical diagram



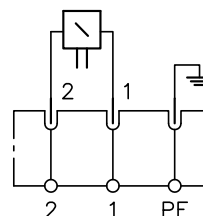
## 2.4.3 Adapter for pedestrial, central pedestrial

Protection class IP 54 per DIN EN 60529 and IEC 60529 when assembled and tightened

### Adapter for pedestrial, central device socket MSD 1 to DIN Form A

| Type          | Part number   | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|---------------|---|-------------|--------------------|--------------------------------|----------------------|
| MSD 1 - MSD 3 | 6217 6004-00  | black       | 2+PE               | 250 V DC/AC                    | 6 A                  |
| MSD 2 - MSD 3 | 6217 8034-00  | black       | 2+PE               | 250 V DC/AC                    | 4 A                  |
|               | max. conductor cross<br>section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>Ø (mm)    | Ambient temperature            | Notes, assembly      |
| MSD 1 - MSD 3 | --  | --          | --                 | -30 ... +100°C                 | --                   |
| MSD 2 - MSD 3 | --  | --          | --                 | -40 ... +100°C                 | --                   |

Adapter version MSD 1- MSD 3 for G valve size 1. For transition from MSD - 1 to a line connector in the arrangement DIN 43650 A. For a characteristic order coding see [D 7300](#), adapter version MSD 2 - MSD 3 for G valve size 0 used. For transition from MSD - 2 to a line connector in the arrangement DIN 43650 A.



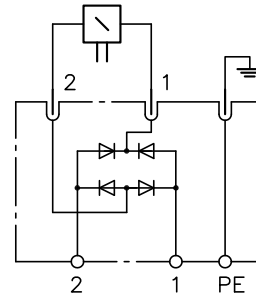
**Adapter for pedestrian, central device socket MSD 2 to DIN Form A with rectifier (circuit)**

| Type             | Part number  | Colour      | Number of contacts | Operating voltage<br>$U_{max}$ | Current<br>$I_{max}$ |
|------------------|--|-------------|--------------------|--------------------------------|----------------------|
| MSD 2 - MSD 3 WG | 6217 8034-00                                       | black       | 2+PE               | 250 V DC/AC                    | 4 A                  |
|                  | max. conductor cross section<br>(mm <sup>2</sup> ) | Cable gland | Cable<br>Ø (mm)    | Ambient temperature            | Notes, assembly      |
| MSD 2 - MSD 3 WG | --   | --          | --                 | -40 ... +100°C                 |                      |

Adapter version MSD 2 - MSD 3 WG additionally with integrated full bridge rectifier <sup>1)</sup>  
<sup>2)</sup>, for G valve size 0. For transition from MSD - 2 to line connector per DIN 43650 A.

The integrated rectifier enables the use of DC solenoids on AC mains supply (50 and 60 Hz).

$$U_{DC} = 0.9 U_{AC} - 2 V$$



<sup>1)</sup> **i NOTE**  
The diodes extend the valve's fall time by 2 ... 5 times or more, depending on the size of the solenoid and the valve mounting.

<sup>2)</sup> Diodes 1 N 4007, peak reverse voltage 1000 V, nominal current 1 A



## 3 Dimensions

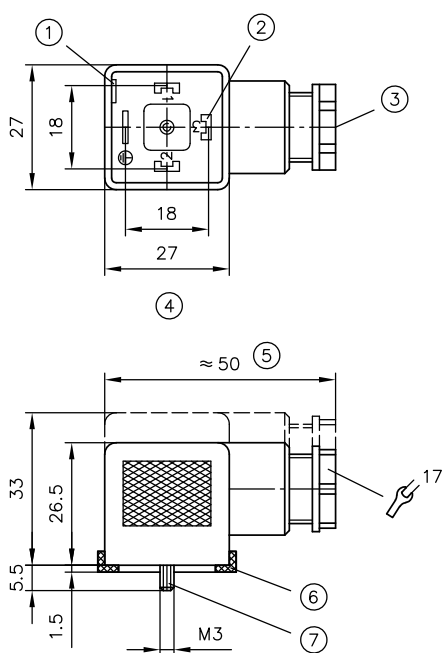
All dimensions in mm, subject to change.

### 3.1 Line connector per DIN 43650 TL.1, Type A

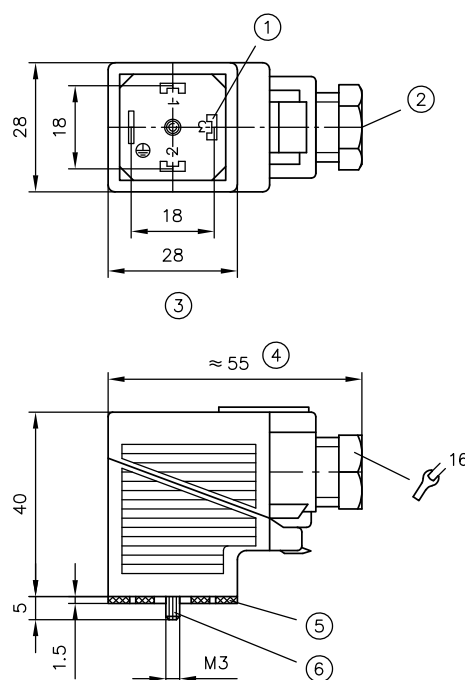
MSD 3-209 C1  
MSD 3-309 black  
MSD 3-309 grey  
MSD 4-309 C1+R  
MSD 4-309 C2

MSD 4-209 P10  
MSD 4-309 P22  
MSD 4 P53  
MSD 4 P63

SVS 3129020 black  
SVS 296048 grey  
SVS 296100

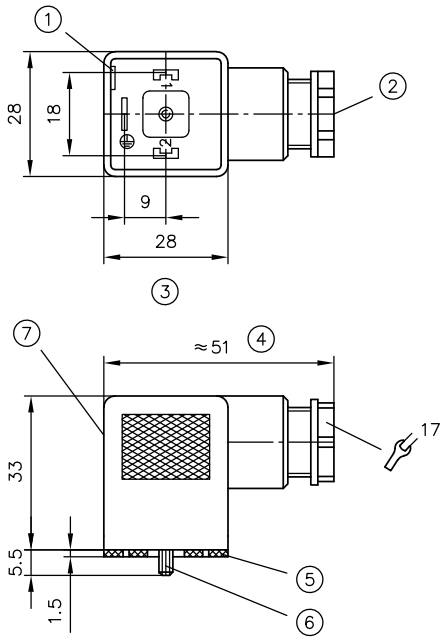


- 1 Screwdriver slot for easy dismantling of insert
- 2 Contact not used in 2-pin version
- 3 Cable gland Pg 9, DIN 43650
- 4 View without seal Cable connection 4x90°
- 5 slackened
- 6 Seal
- 7 Fastening screw M3, tightening torque  $M_A = 0.5 \text{ Nm}$



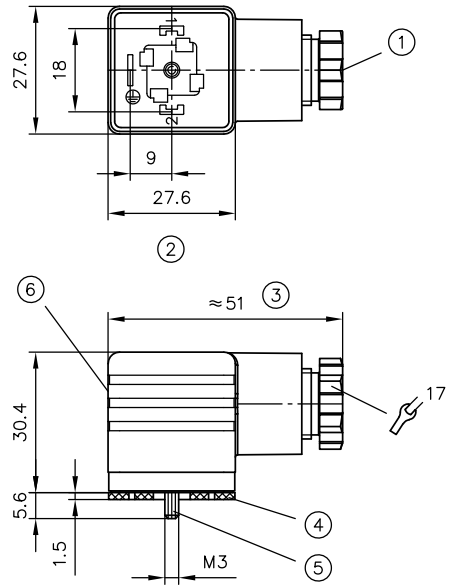
- 1 Contact not used in 2-pin version
- 2 Cable gland Pg 9, DIN 43650
- 3 View without seal Cable connection 4x90°
- 4 slackened
- 5 Seal
- 6 Fastening screw M3, tightening torque  $M_A = 0.5 \text{ Nm}$

**MSD 4 P53  
MSD 4 P63**



- 1 Screwdriver slot for easy dismantling of insert
- 2 Cable gland Pg 9, DIN 43 650
- 3 View without seal Cable connection 4x90°
- 4 slackened
- 5 Seal
- 6 Fastening screw M3, tightening torque  $M_A = 0.5 \text{ Nm}$
- 7 Type identifier printed on this side surface

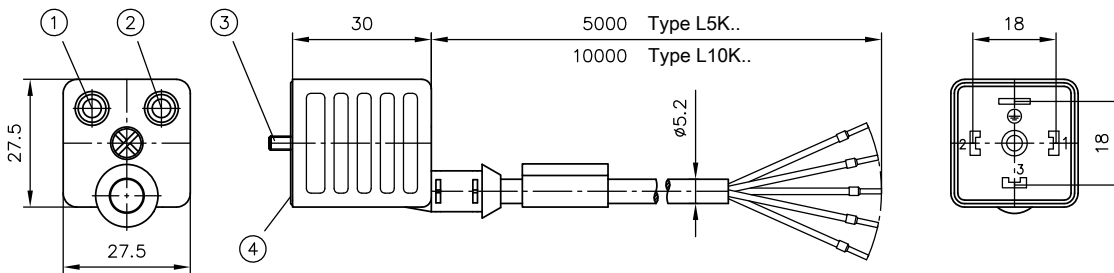
**MSD 4 ECO**



- 1 Cable gland Pg 9, DIN 43 650
- 2 View without seal Cable connection 4x90°
- 3 slackened
- 4 Seal
- 5 Fastening screw M3, tightening torque  $M_A = 0.5 \text{ Nm}$
- 6 Type identifier printed on this side surface

### 3.2 Ready-for-connection line connector to DIN 43650 part 1, model A

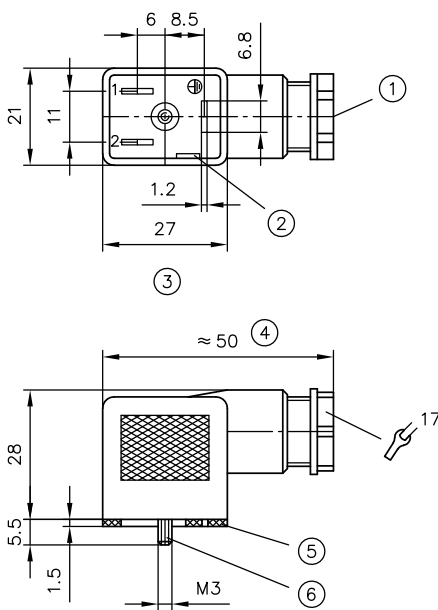
L5K.. and L10K..



- 1 LEDs (yellow)
- 2 LEDs (green)
- 3 Fastening screw M3, tightening torque  $M_A = 0.5 \text{ Nm}$
- 4 Seal

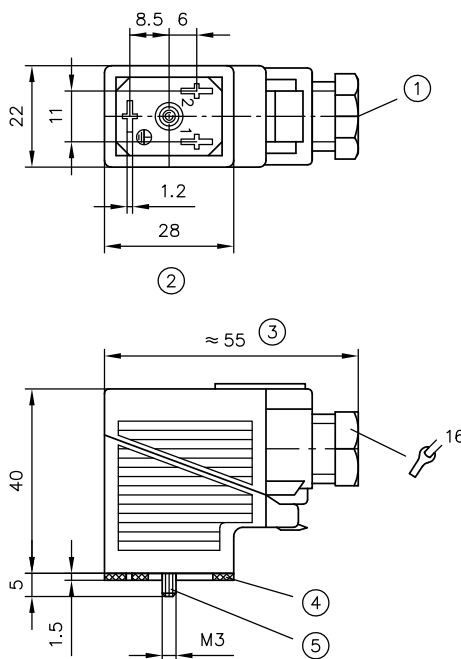
### 3.3 Line connectors slim design, per industrial standard Type B (11 mm contact gap)

MSD 6-209



- 1 Cable gland Pg 9, DIN 43650
- 2 Screwdriver slot for easy dismantling of insert
- 3 View without seal Cable connection 4x90°
- 4 slackened
- 5 Seal
- 6 Fastening screw M3, tightening torque  $M_A = 0.5 \text{ Nm}$

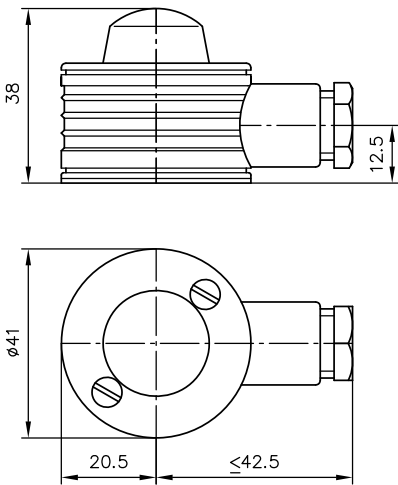
SVS 3129720 black



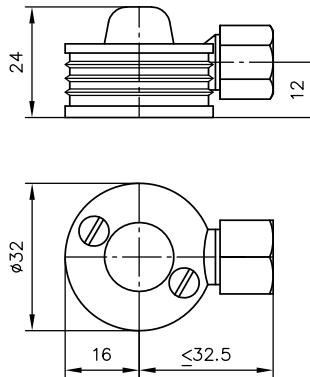
- 1 Cable gland Pg 9, DIN 43650
- 2 View without seal Cable connection 4x90°
- 3 slackened
- 4 Seal
- 5 Fastening screw M3, tightening torque  $M_A = 0.5 \text{ Nm}$

### 3.4 Central socket

MSD 1

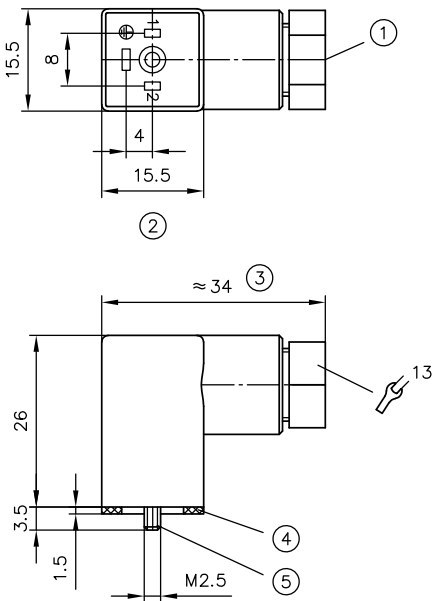


MSD 2



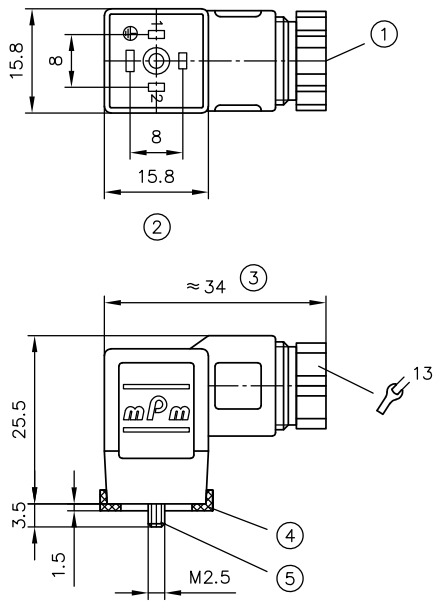
### 3.5 Line connector per DIN 43650 Tl.1, Type C

GDSN 207



- 1 Cable gland Pg, DIN 43650
- 2 View without seal Cable connection 4x90°
- 3 slackened
- 4 Seal
- 5 Fastening screw M2.5, tightening torque  $M_A = 0.5 \text{ Nm}$

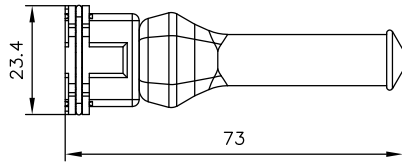
MSD 10



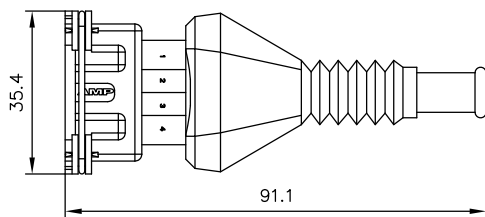
- 1 Cable gland Pg 9, DIN 43650
- 2 View without seal Cable connection 4x90°
- 3 slackened
- 4 Seal
- 5 Fastening screw M2.5, tightening torque  $M_A = 0.5 \text{ Nm}$

### 3.6 AMP mating connector set

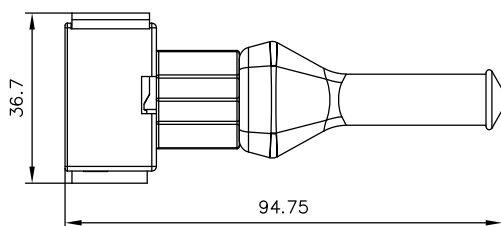
#### AMP mating connector set 2-pin



#### AMP mating connector set 4-pin

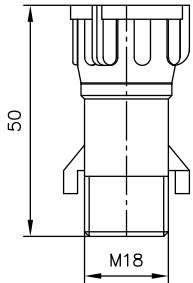


#### AMP mating connector set 4-pin

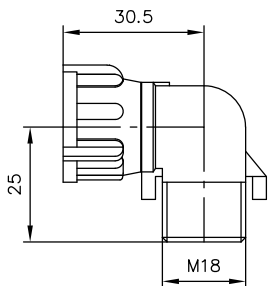


### 3.7 Schlemmer plug with bayonet

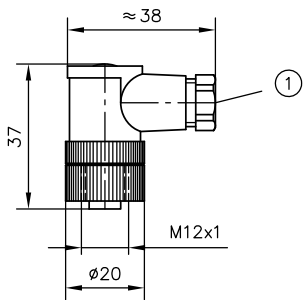
#### Schlemmer plug 10 SL straight



#### Schlemmer plug 10 SL angle



### 3.8 Plug MSD-T7 M12



1 Cable feed rotatable by 90°

#### Electrical connection

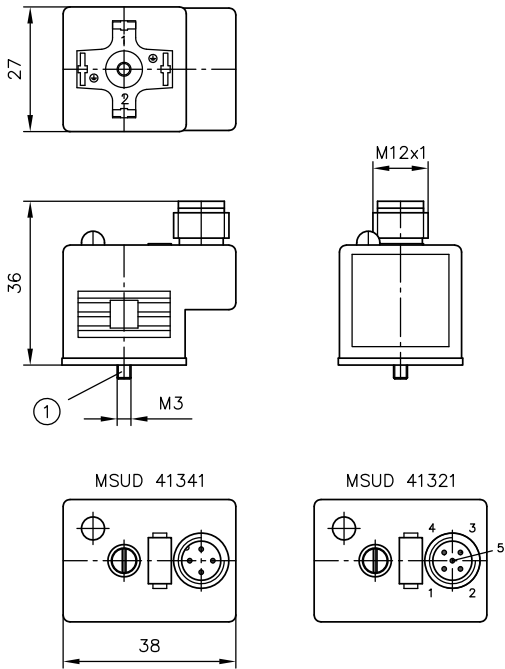


- 1 +24 V
- 2 PNP switching signal
- 3 GND
- 4 IO-Link

### 3.9 Adapter for pedestrian DIN Form A to M12

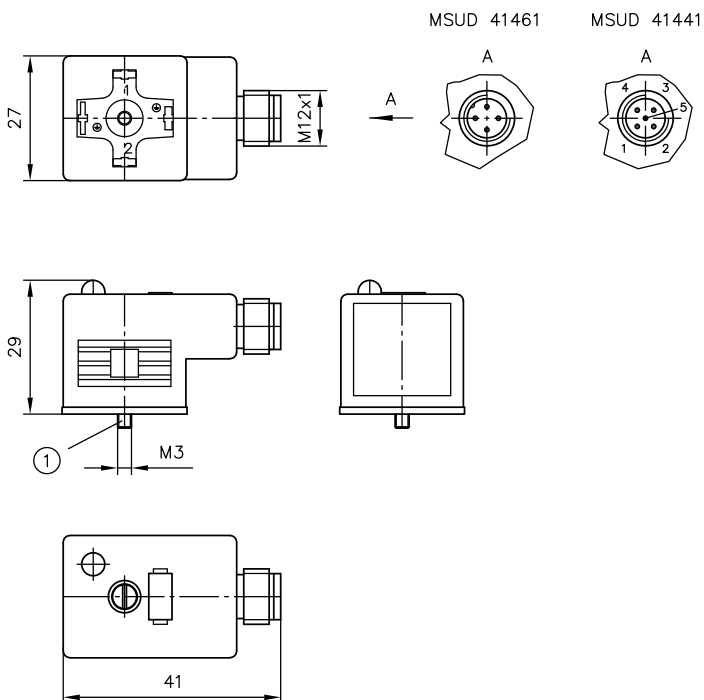
MSUD 41321

MSUD 41341



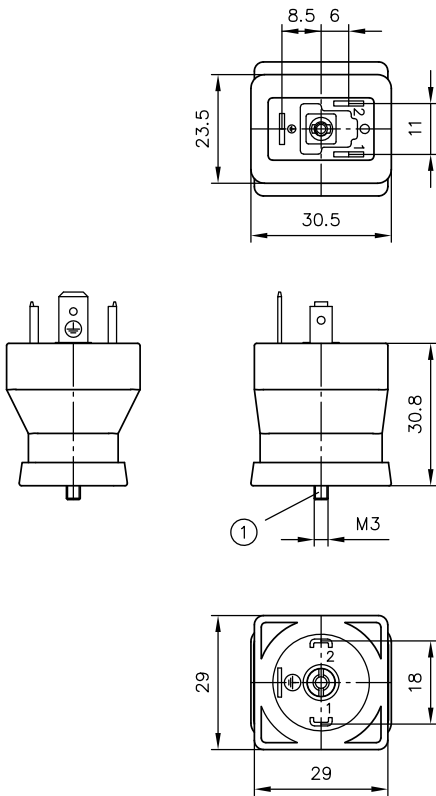
MSUD 41441

MSUD 41461



1 Fastening screw M3, tightening torque  $M_A = 0.4 \text{ Nm}$

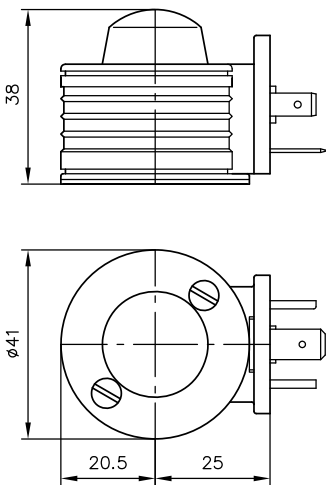
### 3.10 Adapter for pedestrial DIN Form A - DIN Form B



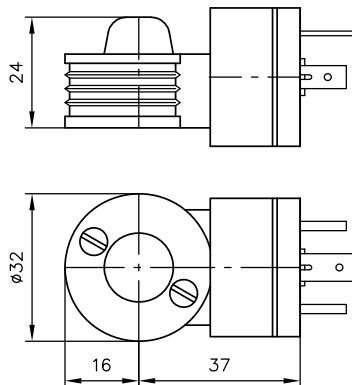
1 Fastening screw M3, tightening torque  $M_A = 0.4 \text{ Nm}$

### 3.11 Adapter for central pedestrial to DIN Form A

MSD 1 - MSD 3



MSD 2 - MSD 3  
MSD 2 - MSD 3 WG





## Further information

### Application

#### Line connector and adapter for electrical connection to:

#### Single-action solenoids:

- Directional seated valve type EM and EMP: D 7490/1
- Directional seated valve type WN and WH: D 7470 A/1
- Directional seated valve type G, WG and others: D 7300
- Directional seated valve type BVE: D 7921
- Directional seated valve type BVG 1 and BVP 1: D 7765

#### Double and reverse solenoids and twin solenoids:

- Proportional directional spool valve, type PSL and PSV size 2: D 7700-2
- Proportional directional spool valve, type PSL, PSM and PSV size 3: D 7700-3
- Proportional directional spool valve, type PSL, PSM and PSV size 5: D 7700-5
- Proportional directional spool valve banks type PSLF and PSVF size 7: D 7700-7F
- Proportional directional spool valve type PSLF, PSVF and SLF: D 7700-F
- Actuation for proportional directional spool valves type PSL/PSV: D 7700 CAN

#### Pressure switches:

- Pressure switch type DG: D 5440
- Pressure switch type DG 51 E: D 5440 E/2
- Electronic pressure switch type DG 6: D 5440 F